

Short Hills Provincial Park



Master Plan

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Short Hills Provincial Park

Master Plan

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Ministry of
Natural
Resources

Hon. Frank S. Miller
Minister
Dr. J. K. Reynolds
Deputy Minister



Minister's Approval Statement

The establishment of Short Hills Provincial Park as a natural environment park constitutes a major addition to the recreational areas of Southern Ontario which are in close proximity to urban population centres. Because of its location and the outstanding natural features associated with the Niagara Escarpment, the park will be a significant component in the provincial parks system.

On behalf of the government and the people of Ontario, I want to commend the members of the Short Hills Provincial Park Advisory Committee for the submission of the Policy Recommendations Report and the Draft Master Plan, which are worthy contributions to the establishment of planning, development and management policies for the park. Also, the valuable commentary and advice provided to my staff by interested citizens and local government officials during the planning process as a result of the Advisory Committee's extensive public participation program is gratefully acknowledged. I look forward to the continued expression of a high level of interest by groups and individuals related to the planning of provincial parks throughout Ontario.

With comparatively few exceptions, the recommendations submitted by the Advisory Committee have been accepted and are incorporated in this document. Rather than establish a liaison committee, I am confident that effective communication to achieve the intentions of the recommendation can be accomplished through the office of the District Manager of this Ministry in Pelham. The suggestion to develop a demonstration farm within the park is considered inappropriate. The Committee's views against charging a vehicle parking fee will be considered further; but, at this time, the intention is to implement the existing Ministry policy, by charging a daily vehicle entry permit fee of \$1.50 when the park becomes operational. In addition, the recommendations regarding the location of the eastern park entrance road, visitor centre and park administrative headquarters could not be complied with in terms of the

relationship to the overall plan and the need for the park to operate as a functional unit. As for the establishment of an outdoor education advisory committee, it is the intention that Ministry staff will have liaison with officials delegated by the various educational agencies.

Other recommendations pertaining to access roads, water supply, park extension and land-use agreements for the provision of recreational opportunities on public lands in the peripheral area require additional study and consultation with officials of the local and regional governments and the public agencies. Furthermore, certain proposals regarding the St. Catharines Crush Stone Quarry, land-use controls for areas surrounding the park and the improvement of pedestrian access to the park from neighbouring municipalities are outside the mandate and authority of this Ministry. However, the intentions of these recommendations are supported by the Ministry; consequently, they have been referred to the appropriate agencies for consideration.

As approved by me, in accordance with The Provincial Parks Act, Sections 1d and 7a, the Short Hills Provincial Park Master Plan is the official policy for the preservation, development and management of the park. I am confident that the implementation of this plan will protect the features of a very scenic area and provide opportunities for a variety of recreational activities compatible with the preservation of its resources.



Hon. Frank S. Miller
Minister

August, 1977

Acknowledgements

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Metric Measures

Unit	Equivalent
centimetre (cm)	0.3937 inches
metre (m)	3.2808 feet
kilometre (km)	0.6214 miles
square kilometre (sq km)	0.3861 square miles; 100 ha
hectare (ha)	2.4710 acres
cubic metre (cu m)	35.3148 cubic feet
kilogram (kg)	2.2046 pounds
kilowatt (kw)	1.3410 horsepower
degrees Celsius (°C)	%Cx 9/5 + 32 = degrees Fahrenheit (°F)

Introduction

Background of The Master Plan

The Niagara Escarpment Study, presented to the Ontario Government in 1968, made an important recommendation regarding the future recreational use of the Short Hills area. This hilly countryside of forests and open spaces is one of the few areas between Hamilton and Niagara Falls that offers the residents of the Niagara region a relatively large natural environment for passive recreational opportunities. After reviewing the study, the government acquired land in the Short Hills area for a proposed provincial park.

In October 1973, the Minister of Natural Resources announced the formation of the Short Hills Provincial Park Advisory Committee to make recommendations for the development and management of the proposed park, taking into account pertinent local, regional and provincial factors. The Advisory Committee carefully studied the area and considered approximately 400 submissions from individuals, clubs, organizations and local municipalities, received during the public participation program outlined in Appendix A.

On July 9, 1974, the Advisory Committee submitted to the Minister of Natural Resources a policy recommendations report outlining planning guidelines for the park. Following study of the report, the Minister released a statement on August 6, 1974 indicating that, with few exceptions, the policy recommendations were supported by the government and that certain matters would be studied further. The major highlights of the Advisory Committee's report were that emphasis should be placed on the recreational opportunities that required only a minimum level of development. In addition, the Minister announced that the preparation of a master plan for Short Hills based on the accepted policy recommendations would begin immediately by Ministry staff in association with the Advisory Committee.

Purpose of The Master Plan

The Short Hills master planning project team reviewed the policy recommendations report, associated resource documents and the public submissions. Based on the information contained in the various documents and other relevant material obtained from government and planning officials, the master planning staff prepared a master plan for the park.

The purpose of a provincial park master plan is to provide a policy framework and detailed guidelines for the planning, development and management of the park, as outlined below:

1. Define the area in relation to other provincial parks, recreation areas and other public and private facilities.
2. Analyse and establish the resource values and capabilities of the area.
3. Define the goal and objectives of the area according to its park classification.
4. Designate park zones.
5. Identify resource management policies and programs.
6. Outline the recreational and educational opportunities to be provided.
7. Identify physical development, operational, staffing and phasing programs.

This master plan, as approved by the Minister of Natural Resources, will direct the development and management of Short Hills Provincial Park. In keeping with Ministry policy, the plan will be reviewed at regular intervals.

Regional Context

Master Plan Highlights

- The park is designated as a "natural environment park" under the Ontario Provincial Parks Classification System.
- Public motor vehicles will be kept to the periphery of the park.
- Access to the features in the park will be provided by a system of carefully designated trails.
- The park area is divided into three zones: development, hinterland and natural, in which appropriate resource management policies will be carried out.
- Park facilities will be constructed in phases.
- Environmental impact and visitor use will be monitored.
- A visitor services program will be developed as outlined in the master plan.
- The park will be operated on a year-round basis.
- Certain areas and facilities will be designed to meet the requirements of the handicapped.
- Passive recreational activities, such as picnicking and hiking and trails for equestrians and bicyclists, will be developed.
- Significant natural features, such as the Niagara Escarpment and the Twelve Mile Creek cold-water fishery, will be protected and conserved within the park.
- Compatible land-use zoning of the area surrounding the park is recommended for implementation by the Regional Municipality of Niagara and the Niagara Escarpment Commission.
- Provision will be made for intensive recreational activities by negotiated agreement where possible, with private and public landowners in the peripheral area.

The Niagara Escarpment, extending from Niagara Falls to Tobermory, is one of the most prominent natural features in Southern Ontario. Located on the escarpment, the Short Hills area is a system of valleys of preglacial origin. These valleys were subsequently modified by glacial deposition, water action and erosion.

The Short Hills area is significant because of its physical structure and the fact that it contains the only spring-fed streams in the Niagara Peninsula. These streams form the headwaters of Twelve Mile Creek. The area differs dimensionally from the escarpment in general. It is not linear, but rather about 4 km long and approximately 3 km wide and 94 m in relief from the Fonthill Kame Moraine to the base of the escarpment. It differs physiographically from the surrounding area. To the east and west is a relatively flat plain underlain by limestone bedrock. To the south is the Fonthill Kame Moraine, a glacial structure which covers the end of the valleys and is the source of water for Twelve Mile Creek. On a clear day, it is possible to see Hamilton and Toronto from the top of the Fonthill Kame-delta.

Lying in the midst of a region with growing population, Short Hills is a natural area that is generally protected from the sounds and sights of urban Ontario.

Population Centres

The largest urban centre in the proximity of the park is St. Catharines, with a population of about 117,000. Other centres within a 40-km radius of the park include Thorold, Pelham, Welland, Port Colborne, Grimsby, Niagara Falls, Niagara-on-the-Lake and Fort Erie. Smaller centres near the park include Lincoln, West Lincoln and Wainfleet.

In 1969, the Regional Municipality of Niagara was established consisting of a regional government for the peninsula area and twelve local governments. While population in the region has gradually increased, industrial development and relocation have not been factors in the growth of new communities in recent years. In fact, the trend has been toward the growth of already established industries rather than the development of new industries. However, there are indications of a substantial increase in industrial development within the Hamilton, St. Catharines, Thorold and Haldimand-Norfolk areas over the next two decades. Studies conducted in association with the preparation of the Official Plan for the Regional Municipality of Niagara, indicate that the population of the region will reach 500,000 by 1981.

Figure

1

Regional Context

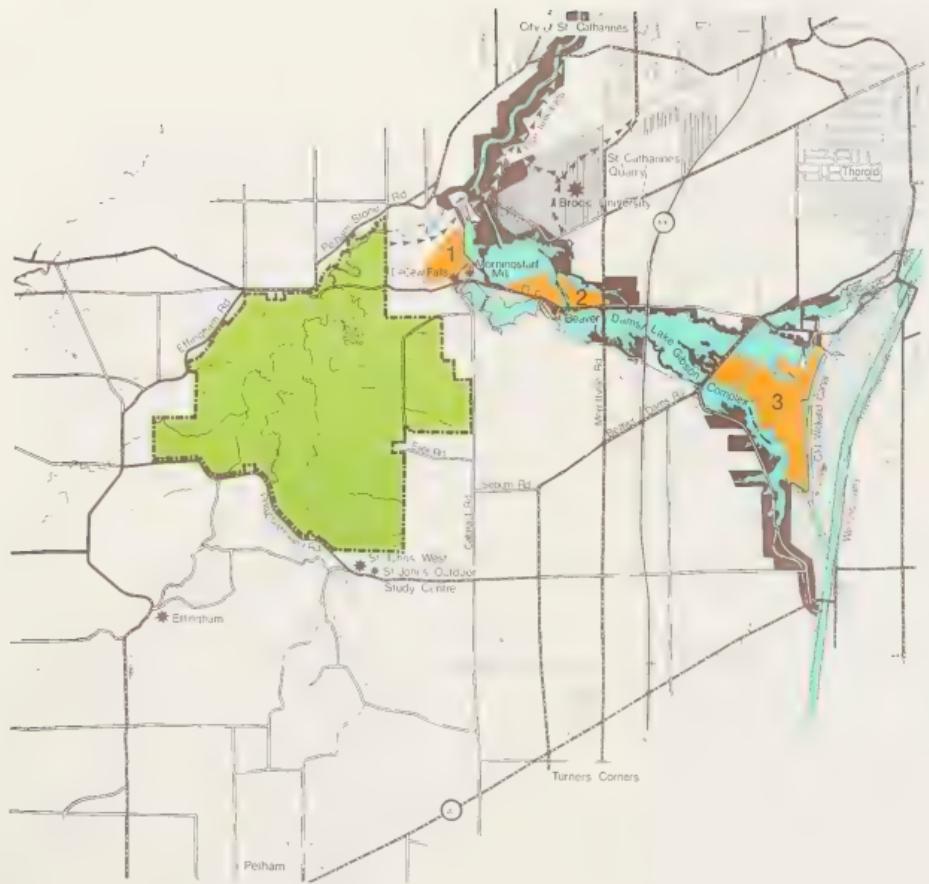
* Park Location



Figure

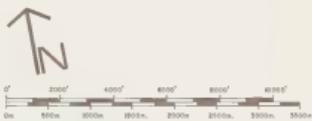
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Park Site and Peripheral Areas Of Public Lands



- 1 Swimming, Court Games
Shoreline Access For Fishing,
Historical Interpretation
- 2 Family or Group Camping,
Motorcycling, Snowmobiling
- 3

Park Site



Park Location

Lying adjacent to a growing urban population is an attractive, rather isolated land area that has retained much of its natural character: the Short Hills (Figure 1). Within this broad area of the Short Hills lies the park, approximately 688 ha located southwest of St. Catharines in the Townships of Pelham, Thorold and Louth.

Park Boundaries

The park must function, and be recognized, as a unit. At present, the area proposed for the park is bounded by Cataract, Holland/Roland, Effingham, Pelham Stone, and DeCew roads (Figure 2). For the most part, it does not include peripheral residential holdings. However, as recommended by the Advisory Committee, the boundaries do not encompass natural features which extend beyond existing property lines; and, therefore, the boundaries should be extended in certain areas through the purchase of adjoining land from willing vendors as the opportunity and financial resources permit. Expansion of the park boundary toward the northeast would facilitate the establishment of trail linkages and the provision of opportunities for intensive recreational use in the peripheral areas.

Peripheral Areas

Serious consideration will be given to the acquisition of such properties as the Morningstar Mill and certain other lands owned by Ontario Hydro and the St. Lawrence Seaway Authority. These lands would provide for trail linkages and nodal areas for intensive recreational uses as indicated in Figure 2. The determination of specific uses for the areas will be based on detailed analysis of the resources, land capability, the land acquisition program and access to the sites.

Access

Generally, the park area is well-connected to major road and highway arteries (Figure 1). The Queen Elizabeth Way provides ready access from the north, west and east, placing the park area within approximately 80 minutes, 60 minutes and 45 minutes by car from Toronto, Hamilton and Fort Erie, respectively. Highway 406 from St. Catharines to Welland, when completed, will place the park within 10 minutes driving time from the Queen Elizabeth Way.

An alternative access route is Highway 20, south of Short Hills, connecting with the Queen Elizabeth Way at Stoney Creek and at Niagara Falls. It also connects with Highways 406, 57 and 58. Highway 58 leads south to Welland and Port Colborne, 25 and 35 minutes away, respectively. Various transportation planning studies completed for the Niagara region

during the past decade indicate that through the development of new highways and the improvement of present alignments and capabilities, there will be satisfactory automobile access to Short Hills Provincial Park.

Public transportation in the area of the park is limited. Scheduled passenger service by bus and train from outside the Niagara Peninsula is readily available to the larger centres in the region, but service between local points is restricted. A public transportation study for the Regional Municipality of Niagara is currently under way. Preliminary indications are that public transportation between the various population centres will be improved. However, the proposed major routes will likely bypass the park area. If public transportation to Short Hills Provincial Park is to become a reality, a local transfer or excursion system will become necessary.

Market Analysis

Rock Point Provincial Park and Selkirk Provincial Park, located in Haldimand County, 43 km and 71 km from the Short Hills area, respectively, are the only other provincial parks in the Niagara Peninsula. These parks provide a mixture of day-use and camping opportunities and are classified as recreation parks under the Ontario Provincial Parks Classification System. The closest natural environment park is Turkey Point, 318 ha in area and approximately 120 km away.

There are numerous public and private parks within the Niagara region. The conservation areas, operated by the Niagara Peninsula Conservation Authority, provide a variety of recreational and educational opportunities. Byng Island Conservation Area, 140 ha in area and 37 km from the park, is operated by the Grand River Conservation Authority.

The Niagara Parks Commission provides recreation and outdoor education opportunities in campgrounds and historic areas along the Niagara Parkway. Although there are no parks operated by the regional level of government, each of the twelve municipalities provides a wide variety of parks and recreational opportunities ranging from small, intensively developed urban parks to large, lightly developed areas.

In close proximity to Short Hills Provincial Park, there are several private parks, many of which provide for tent and trailer camping. Effingham Valley Park is 13 ha in area, less than 2 km from the park and has approximately 75 campsites. Bissells Hide-Away is 40 ha in area, approximately 6 km from the park, and has about 200 campsites. Within an hour's drive from the Short Hills area, there are approximately 6,600 public and private campsites. Other major recreational and tourist areas within the Niagara region include the Marineland and Game Farm at Niagara Falls, Crystal Beach, Garden City Raceway and the Welland Canal.

Short Hills Provincial Park must fit into a regional setting of recreational development. The variety and capacity of developed recreation opportunities that are easily accessible to populations in the region are expanding. Short Hills Provincial Park will relate to the other opportunities permitting people to move from one park system into another. Scenic roads, historic routes, as well as hiking, bicycling and horseback riding trails will be important linkages for the movement of people to and from the park. At present, trails along the Twelve Mile Creek Valley, utility corridors, and local road allowances can provide important linkages to the Lake Ontario shoreline, the Beaver Dams-Lake Gibson Complex, and the Welland Canal.

Competition for the use of the province's outdoor recreation resources is growing at an enormous rate. This is accentuated in Southern Ontario where the concentration of people living in highly urbanized areas has resulted in a disproportionate demand for outdoor recreation resources within a limited geographic area.

The Policy Co-ordination Secretariat of the Ministry of Natural Resources is presently involved in analyzing present and future supply/demand configurations for outdoor recreation within Ontario. One segment of this overall study reviewed the public outdoor recreation opportunity relationships available within the Central Ontario Lakeshore Urban Complex. The Niagara region was identified as having a relative deficit in the provision of golfing, boating, swimming and picnicking opportunities. These particular activities are believed to be indicators of both the resource and non-resource-determined outdoor recreation opportunities.

The pilot Ontario Recreation Survey of 1971 showed that 87 percent of all recreational participation was done from home base and that for picnicking, swimming and hiking (three of the more common day-use activities), 46, 64 and 46 percent, respectively, of all participation was done within 48 km of home. One of the major constraints on increased participation was identified as the scarcity of supply, particularly near the places where people live.

Participation by Ontario residents in trail activities, i.e., snowshoeing, bicycling, backpacking, hiking and horseback riding has escalated from 1967 onward. The rates of consumption for these forms of passive recreation greatly exceed population growth.

The foregoing shows the need for the provision of additional public recreation areas within the Niagara region with the emphasis on passive recreational pursuits.

The park is about a day's walk from Queenston, the southern terminus of the Bruce Trail, a 692-km hiking trail. Users of the Bruce Trail require lightly developed camping areas for overnight stops. Facilities suitably designed and located within the park will meet this demand.

Accessibility to a large number of people, as well as the type, variety and quality of facilities and special characteristics, influence the degree of park use. Certainly, Short Hills Provincial Park fulfills these requirements for attracting day-users. Also, the level of recreational development is an important factor in influencing the kind and degree of use made of an area. In this park, emphasis has been placed on the protection of the natural environment and the provision for activities requiring a minimum level of development.

Biophysical Resources

Climate

The park is located in a distinct climatic region above the Niagara Escarpment known as the Lake Erie Counties and separate from the Niagara Fruit Belt. The lowest minimum temperature recorded in the Niagara Fruit Belt is -25°C at St. Catharines. Welland, 16 km to the south, but on top of the escarpment, has a recorded low temperature of -30°C . Generally, summer temperatures in the park area range between 16°C and 33°C with an average of 21°C to 22°C . Precipitation throughout the area ranges from 81 to 86 cm per year with approximately half of this falling from May through September.

Snowfall throughout the park area is relatively light. During the period from November to March, the average snow fall is 152 cm. For January and February the average snow cover is 7.5 cm. The relatively short snow season coupled with little snow, relatively warm weather and occasional rain reduce the snow quality for winter recreation.

Geology and Geomorphology

An almost complete chapter of the history of the Paleozoic era in Ontario can be found in the numerous bedrock exposures along the tributaries of Twelve Mile Creek. The bedrock, which is part of the Silurian System, is represented by the formations of the Cataract, Clinton and Albemarle groups. These various limestone, dolomite, shale and sandstone formations are the result of sedimentation within a warm, shallow sea which occupied the Michigan basin 425-440 million years ago. After the deposition of this Silurian sequence, an extended period of erosion sculpted the present morphology of the Short Hills Provincial Park area. The surface expression of the bedrock in the park is dominated by the Niagara Escarpment whose steep rock face has been formed by the differential erosion of a hard cap rock and a softer underlying rock. An upper primary scarp, capped by Lockport dolomite, and a lower secondary scarp, capped by Irondequoit limestone, comprise the major components of the escarpment.

The majority of the park is set within a re-entrant valley cut into the escarpment by the erosional process of ancient rivers. It is postulated that a now buried bedrock valley, the Eriean Valley, once connected the Erie and Ontario basins through this re-entrant valley. The geological features and rock sequence of the park are illustrated in Figure 3. During the Cenozoic era, a multiple series of major glacial advances and retreats carved and accentuated the bedrock topography. The last of these major advances overrode the park and extended south of the Lake Erie basin before beginning a long and fluctuating retreat. As the ice front approached the park area, it created a series of pro-glacial lakes in the Erie basin. One of these lake stages is referred to as Lake Warren.

The Fonthill Kame Moraine represents a stage where a delta formed at the interface of the ice margin and glacial Lake Warren. The Fonthill complex probably correlates in time with the Vinemount, Niagara and Fort Erie moraines. During the next stage, the ice front moved north to the mouth of the re-entrant valley creating a small lake between the ice margin and the escarpment. Minor ice movements back and forth across this lake gave rise to a layered sequence of lacustrine and till deposits. The ice margin then continued its withdrawal into the Ontario basin. As it did so, a series of lakes was in turn formed in the Ontario basin. Shorelines associated with one of these, glacial Lake Iroquois, may be found on the plains north of the park.

Upon recession of the ice margin, streams began to cut their way through the layered deposits which filled the re-entrant. In time, a dendritic drainage pattern developed, and the stream, now known as Twelve Mile Creek, evolved. Streams fed by springs at the base of the Fonthill Kame-delta have cut a series of valleys, which are for the most part narrow and V-shaped in the upper reaches of the lateral branches, while the lower reaches of the main branch are contained in a broad meandering valley. Other streams fed by seasonal water sources enter Twelve Mile Creek from the top of the escarpment. Where these streams meet the re-entrant walls, scenic waterfalls may be found. The continued down-cutting of the layered glacial deposits by these streams has given rise to the characteristic "short hill" topography found within the valley. The interrelationships of all the geological and geomorphological components found within this park offer excellent examples for teaching and/or interpretive programs.

Soils

The soils within the park consist mostly of clays and silts in the slope and upland areas. Valley bottoms have sand and gravel components. Moving south from the park toward Pelham, the soil becomes silty to sandy in nature. Within the park, soil depths have been determined from outcrop exposures and water well records. Three general zones of different soil depths have been identified as follows:

Zone 1: Top of the Escarpment	3-15 m
Zone 2: The Escarpment	0- 3 m
Zone 3: Re-entrant Valley	3-30 m +

The soils within the park area are very susceptible to seasonal variation in moisture content. The clays and silts are saturated and muddy in the wet season and arid and dusty in the dry season. This seasonal variation makes the clays susceptible to wind erosion when dry and to mass movement erosion when wet, as indicated by the slump and transverse scars in the park. The sands and gravels are more likely to erode in the form of particle and sheet movement down slope. The problem of erosion is accentuated by the

steepness of many of the slopes in the park, particularly where the areas are devoid of vegetation. Based on a planning criterion of 10-20+ percent slope, a high proportion of the land in the park, as shown in Figure 4, is in a semi-stable to non-stable condition, and development of any form is to be avoided (except for carefully located trails).

Hydrology

The major source of water for the main branch of the Twelve Mile Creek system flowing through the park is a series of small springs at or near the base of the Fonthill Kame-delta. Many of the other branches contain water only when rainfall exceeds the infiltration rate or when the ground water is charged to capacity.

Generally, only the main branch of the creek contains water all year. Most of the tributaries dry up in August. Because of the relatively small size of the basin, the fact that much of the area is open fields and a predominance of clay, there is a short time lapse between precipitation and maximum runoff. Historical reports suggest that Twelve Mile Creek has suffered a slight loss in flow in recent times. This flow reduction may be due to the clearing of the basin, an increase in the number of wells and the heavy demand for water for industrial and agricultural uses.

The water quality and the quantity of stream flow in the Twelve Mile Creek basin are important environmental aspects to be considered in the planning of the park. In the lower reaches of the creek, most of the water comes from the Welland Ship Canal en route to the power plant at DeCew Falls. The upper reaches of the creek include those streams located inside the park that are fed by springs and surface runoff and are therefore dependent on the seasonal recharge of the water supply. Because of the impermeable nature of the clay soils, high water levels in the stream basin are found shortly after storms and during spring runoff. These conditions can give rise to temporary flooding in the valley bottom and to increased erosion. The area is also susceptible to near-drought conditions during the dry periods of the year.

In the past, water samples from the upper reaches of Twelve Mile Creek have indicated that the water is of questionable quality, particularly with regard to coliform bacteria. Stream surveys conducted in 1972 and 1974 found brook trout and rainbow trout in the Effingham and St. Johns branches of the creek. Erosion of the stream banks and increases in the water temperature caused by cover reduction along the stream banks and pollution in the form of sewage are serious problems related to the maintenance of fish populations. In the long-term, cooperative management between the public and private sectors will be needed if a cold-water, trout-producing stream

is to be retained in the Niagara Peninsula. This is because the headwaters of the creek are outside the boundaries of the park.

Flora and Fauna

The park area is within the Niagara Section of the Deciduous Forest Region (Rowe, 1972). The main characteristic of the area is the predominance of hardwoods and the relative lack of coniferous trees. There are also various species, such as oak and hickory, that are typical of the Carolinian Zone. A list of species in the park has been compiled. At present, only about 40 to 50 percent of the area is under forest cover, and of this the greater part is located in the valley bottoms. Most of the upland areas were cleared by settlers and had been farmed until recently.

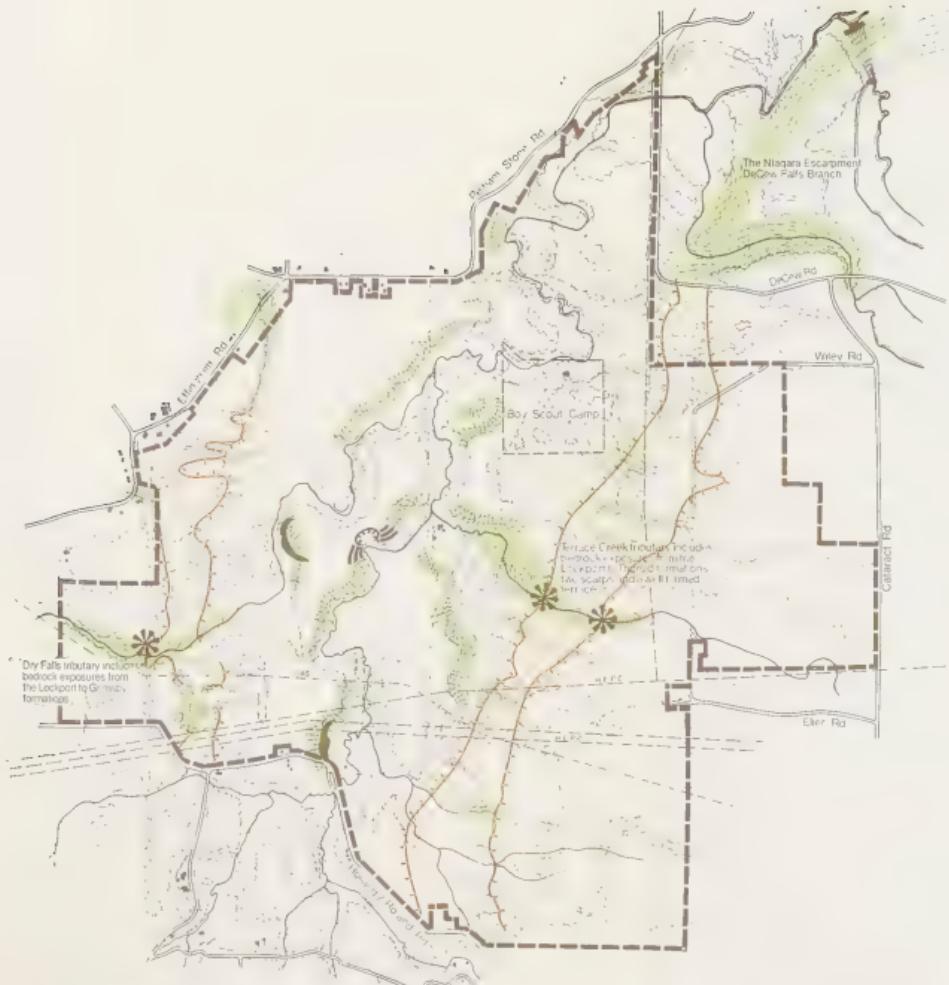
There are several distinct vegetation associations within the park. Sugar maple-beech forest association is found mostly on the upland areas and on the upper slopes and hilltops. Usually, it is associated with deeper, well-drained, moist soil, although it does appear on thinner, humid soils underlain by limestone. One of the most important ecological factors is slope aspect. North and south-facing slopes have different species composition. The south slopes tend to have red oak, shagbark hickory and white pine, while the north slopes tend to favour hemlock, cedar and white pine. The valley bottom forest associations contain white elm, ash, red oak, willow and hop hornbeam. Where conditions are fairly wet in the valleys, black maple predominates, while in drier areas sugar maple, beech and Canada plum are prevalent. Other species found in the lowlands of the park include walnut, sycamore and hawthorn.

Several years have elapsed since many of the fields were used for agricultural purposes. Consequently, the areas are characteristic of old fields with thick layers of turf and a mixture of grasses with a few shrubs. The most common shrubs are hawthorn, sumac and red cedar. The whole area of the park, except for a few very inaccessible valleys and steep slopes, was used as rough pasture. Also, the area was logged in the past. To a large extent, vegetation succession has been determined by the trees that remained after logging.

Throughout the park, the edge effect between forest and field is abrupt, eye-catching and ecologically significant because of the range of habitats provided. White-tailed deer, red fox, raccoon, coyote, meadow vole, grey squirrel, red squirrel, chipmunk and cottontail rabbit are found within the park.

A wide variety of nesting, migrant and overwintering birds have been sighted. These include bobolink, brown thrasher, ruffed grouse, pheasant and hawks. Occasionally, rather rare species for the Niagara region, such as yellow warbler and pileated woodpecker, have been sighted in the park area. The eastern garter snake, little brown snake and milk

Figure
3
Geological Features



Figure

4

Topographical Analysis



snake, along with painted turtles, frogs, and toads, have been sighted within the park. There is a wide spectrum of invertebrate species in the park including some rather uncommon butterflies and moths.

Figure 5 shows the most important areas of special natural value. These areas and the stream, if carefully conserved, have the potential to provide an educational opportunity that can be enjoyed by both present and future generations. It should be noted that many of the habitats represent a stage in ecological succession. Some of the areas could be managed so that they remain essentially as they are, while in other parts of the park, natural succession could take place.

Environmental Analysis

The environmental analysis study examined the impact of varying degrees of development and use on the features in the park. The results are shown in Figure 6. The combined limitations to development were determined using the following criteria: soil type, compaction resistance, composition of parent material, relief, drainage, erosion, vegetative cover, past disturbance and special features, such as geological and geomorphological formations and areas of diverse vegetation. Also, information submitted in approximately 400 briefs during the public participation program was helpful in identifying the important features of the park.

The nature of some of the park's resources, such as vegetation and wildlife species and landforms, suggests that in order to maintain the natural character of a park located near urban areas, certain planning guidelines should be considered. The basic problem is allowing use of the park without destroying the significant features that make the Short Hills area so appropriate for recreational and educational experiences. The Short Hills Provincial Park Advisory Committee, after studying the area, available reports and existing recreational opportunities in the Niagara region, and after taking into consideration the needs for the future, made a series of policy recommendations that placed emphasis on the protection of the natural environment.

The terrain of Short Hills Provincial Park is generally unsuitable for intensive recreational development, and the area provides an alternative and exciting opportunity to develop a park in a way that recognizes the importance of a natural environment in a region of Ontario that is going through rapid urbanization. The park site rates highly in aesthetic appeal because of the variety of landforms and the meandering Twelve Mile Creek. Whether in the steep valleys, on a ridge, or in the open fields, the general mood of tranquility in a natural setting is pervasive.

Although the snow conditions are not ideal for winter sports, there is the potential for certain activities that

would have low impact on the environment. Thus, both summer and winter recreational activities that require minimal development and provide a high quality experience of a quiet nature are considered appropriate: that is, provided that the activities individually or cumulatively do not seriously damage, destroy, or otherwise impair the geological, biological, historical or archaeological values of the park.

Visual Analysis

The visual diversity of Short Hills Provincial Park is mainly due to the incised terrain of hills and valleys. As shown in Figure 7, the visual experiences range from a distant vista of the expanse of open grassland to narrow winding spaces defined by valley walls. The valley corridors give one a feeling of isolation and closeness to nature, while the relatively flat, open lands, once farmed by man, afford a feeling of freedom within vast open spaces.

Those lands that have been farmed contain pastures, fences, linear tree lines and lanes, characteristic of rural landscapes. The hydro transmission towers along two corridors stand out as man-made intrusions on the natural landscape. The visual enjoyment of park amenities should be a motivating element and a major guideline in the planning and design of recreational facilities.

Cultural Resources

Historical Context

There are no major historical sites within the park boundaries, but there are several sites and features in close proximity to the park (Figure 8). These sites are historically related to the Short Hills area and provide possibilities for the development of meaningful interpretive programs. These programs would reflect the interplay of the social, economic, political and military forces and events which have affected the Short Hills.

Prehistory

A preliminary study showed no notable archaeological remains in the park other than a few flint chips associated with Laurentian Archaic people. Based on other archaeological studies pertaining to the Niagara Peninsula, it is probable that the Attiwandrons Indians maintained semi-permanent villages within the Niagara region. At a later period, the Short Hills area was inhabited by the Chippewas. However, the rugged and varied topography and generally unsuitable soil conditions probably proved to be a constraint to the establishment of a viable Indian economy based on agriculture. As a significant land bridge between Lake Erie and Lake Ontario, the Niagara Escarpment as a whole was inhabited, and the occupation has certainly embraced most of the themes of Ontario prehistory relevant to the southwestern part of the province.

Settlement

The Short Hills area was significant from 1780 to 1900 on provincial, regional and local levels. The history of these years contains the story of the United Empire Loyalist and Quaker settlements, the growth of a local agricultural economy, the phase in which the Short Hills was considered a strategic site in the "defended border" of Canada and the events leading up to and including the insurrection in the Short Hills in 1838. Finally, with the development of the hydro station east of DeCew Falls, the area made a lasting contribution to the modern industrial development of the region. All these events were influenced by the geography of the area — the once swift-flowing Twelve Mile Creek and Beaver Dams Creek and the rugged topography.

Although English and French fur traders were operating in the Niagara area in the seventeenth century, the American Revolution was the impetus behind the first permanent white settlement of the region. Two principal and distinctive groups settled the Short Hills area, the Quakers and the United Empire Loyalists. For the most part, Loyalists were the principal settlers of the park area, while the Quakers settled in Bertie and Pelham Townships, southwest of the park. Both groups were attracted to the area by the presence of the fast-flowing streams which established it as a good milling and agricultural area.

From the late 1780s onward, agricultural settlement expanded, and, before 1820, it was possible to identify nodes of settlement within the area. To the south of the park, the village of St. Johns West emerged, and by 1815 it boasted four grist mills, two saw mills, an axe factory, a fulling mill and a school. St. Johns West expanded until the late 1830s or early 1840s when the impact of the Welland Canal moved the focus of industry east of St. Johns West based on the power potential of the Beaver Dams Creek. With the development of the first Welland Canal, that part of the creek was reduced to a mere trickle, and John DeCew's settlement collapsed. Southwest of the park, the village of Effingham developed in these early years around the mills of Samuel Beckett, a Quaker settler. To the north, on the present site of Power Glen, another pioneer enterprise was founded on the banks of the Twelve Mile Creek in 1783. However, its potential was not realized until the late 1850s when it became known as Reynoldsburg. The development of these early centres of settlement was principally the contribution of the United Empire Loyalist group.

Later, local developments within the area, the development of Reynoldsburg and the construction of the Morningstar Mill, were also based on the water power of the local streams. Unlike the Loyalist enterprises, these industries did not contribute to the social or economic development of the province, but they were locally important. Remnants of the Reynoldsburg site exist today, while the Morningstar Mill, standing north of the park, is in excellent condition.

Exploitation and settlement of the Short Hills was somewhat hampered by its rugged terrain. The area defied the enthusiasm for roads at right angles, as shown in the original survey which did not take into account the topography. Roads, such as the Pelham Road, Beaver Dams Road and the Dundas-Queenston (Holland-Roland) Road, did not succeed in penetrating the Short Hills and had to skirt them. Development of the Short Hills required access roads to be run in from this peripheral ring to mill sites and farmsteads, but not once did these roads succeed in traversing the rugged terrain completely.

Just as the topography affected the settlement of the area, so too the nature of the land determined the role which the Short Hills played in military events. During the War of 1812, the lack of roads through the Short Hills and the ruggedness of that terrain prevented any direct invasion of the area, although the Niagara Peninsula itself was overrun. The lesson of the War of 1812 was not lost on British military leaders as they recognized, on the one hand, the vulnerability of the Niagara frontier and, on the other, the inviolability of the Short Hills area. From 1825 to the 1840s, officials seriously considered erecting a fort in the Short Hills as a link in the chain of forts forming the "defended border" of Canada. Only parsimony prevented construction. Finally, the high hills, deep valleys, lack of roads and rugged terrain of the Short Hills made it an ideal place for the rebels of

Figure 5 Special Natural Features

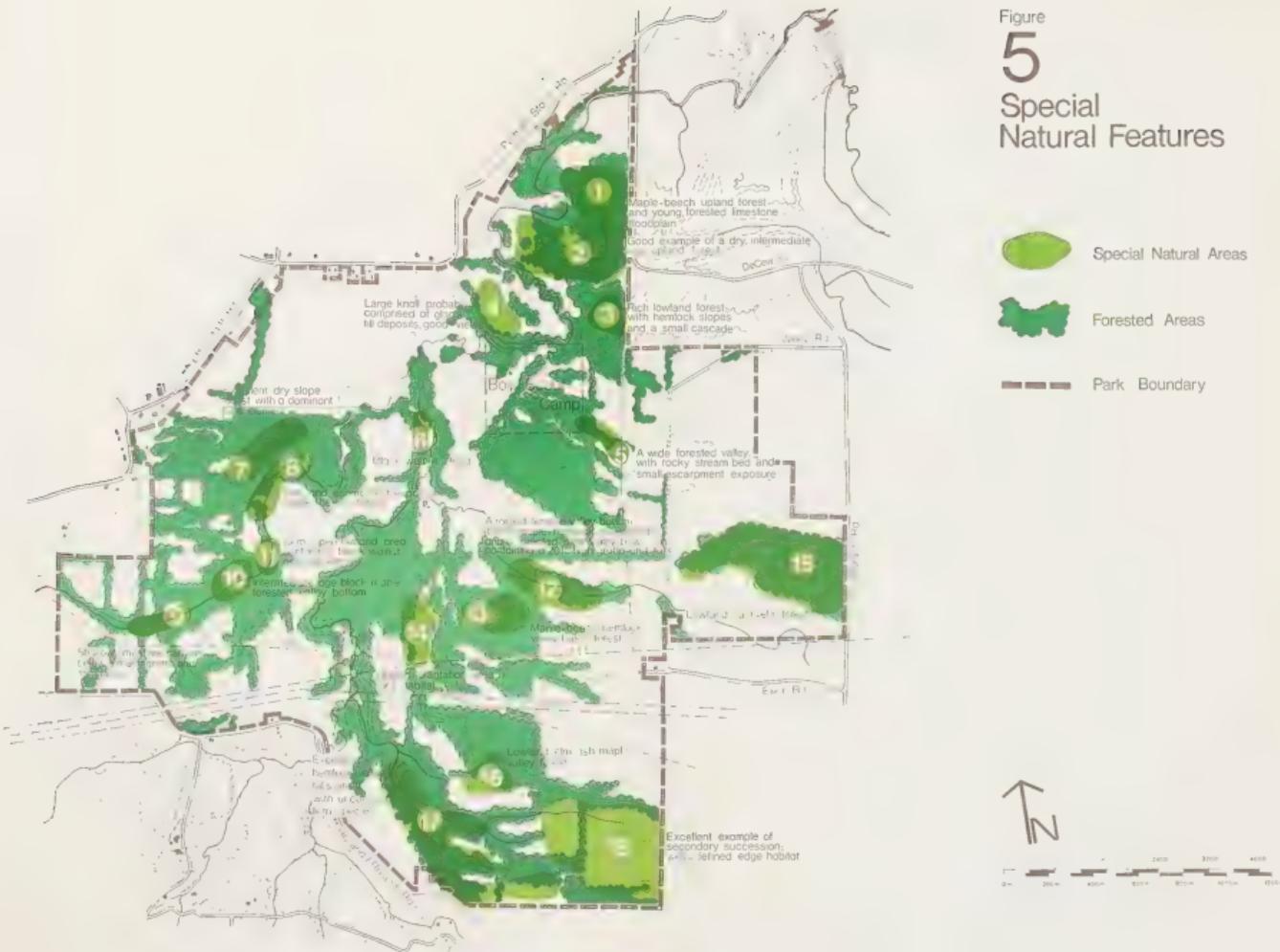
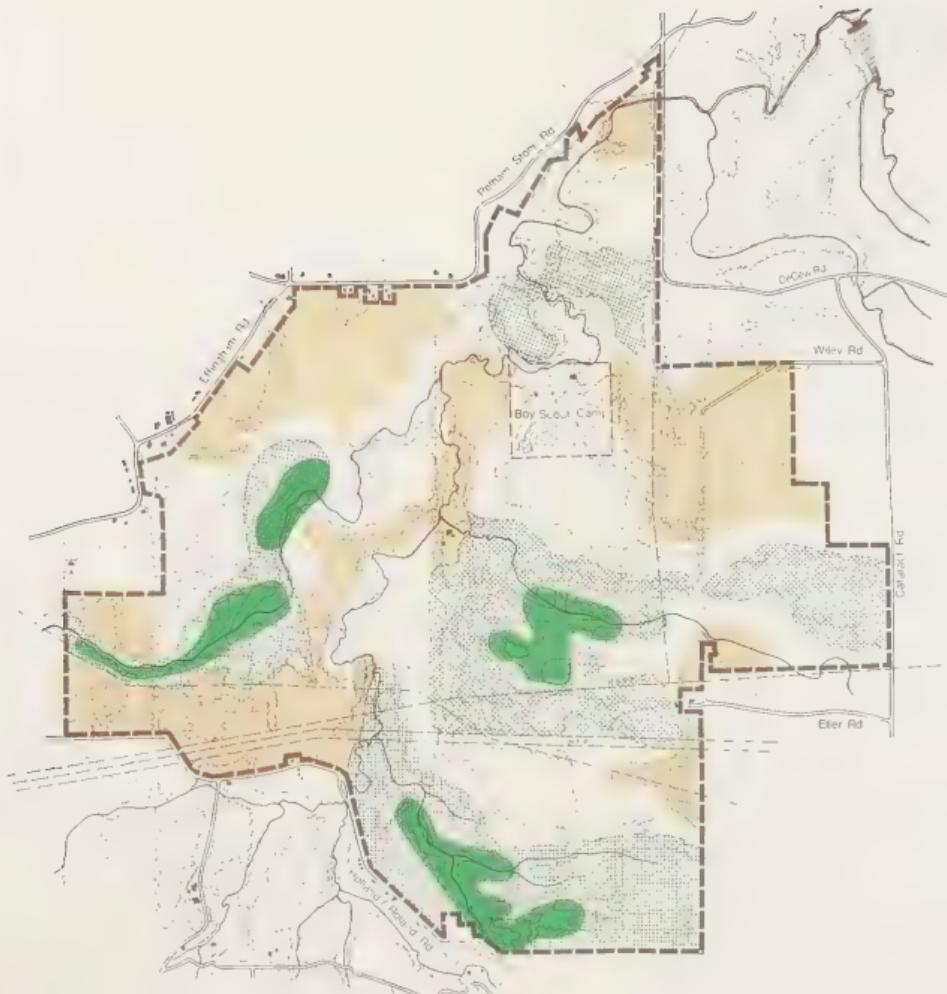


Figure
6
Environmental Areas



- Areas of Highest Natural Value
- ▨ Areas of High Natural Value
- ▨ Areas of Natural Value
- ▨ Areas of Little Natural Value
- Park Boundary



0m 200m 400m 600m 800m 1000m 1200m

Figure

7

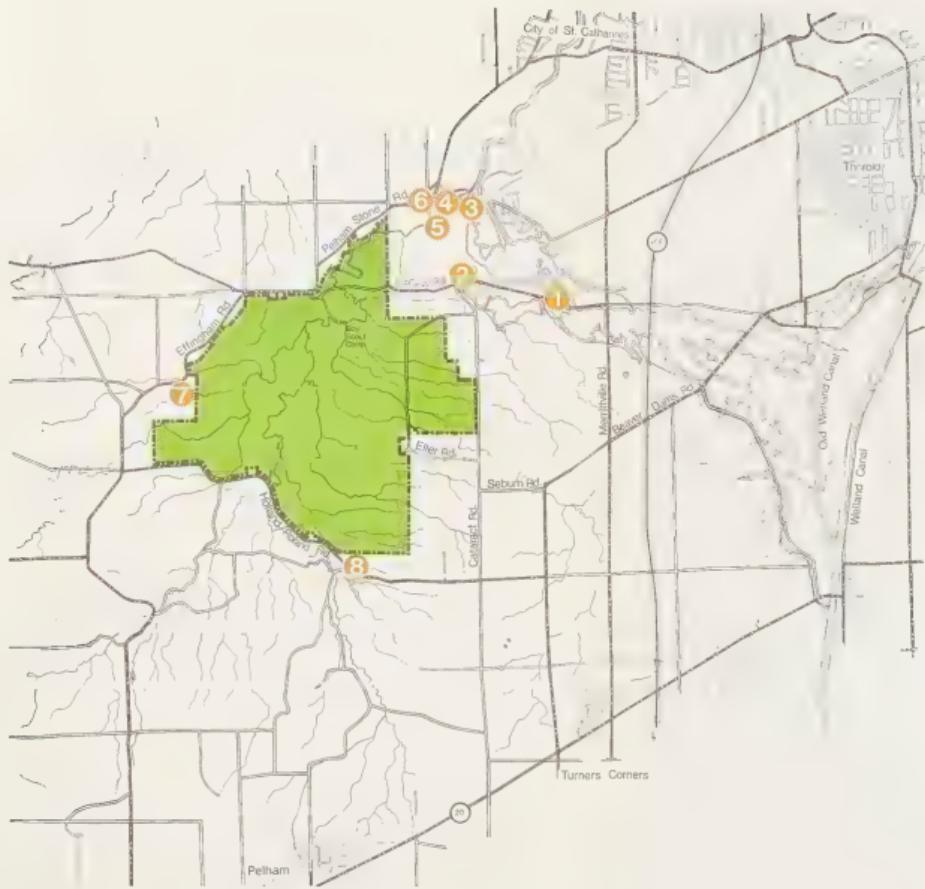
Visual Analysis



Figure

8

Historical Context



Park Policy

1838 to stage an insurrection in support of Mackenzie. Even today, the landforms suggest the strategic and defensive role played by the Short Hills.

Regionally, the Short Hills area was important in the modern industrial development of southwestern Ontario with the development of the hydro generating station east of DeCew Falls and the transmission of power to Hamilton in 1898. This theme is represented in the area today by the presence of the two power stations.

Park Philosophy

The protection of the natural environment is a basic concept for the park because of the increasing social value placed on retreats from the noise and intensive development of urban centres. Both the restriction against motorized vehicles in the park and the location of parking areas at the periphery, as accepted policies, are considered necessary for the perpetuation of the character and landscape features of the area. The master plan provides guidelines for the preservation of the park's resources and places restrictions on development which conflicts with the intrinsic qualities of the landscape that remain after almost two centuries of human settlement in the Short Hills. In the detailed site design of the park, the allocation of activities and facilities will not conflict with the natural character of the park.

Goal

The goal for Short Hills Provincial Park is to provide a variety of high quality, year-round recreational opportunities within a natural environment of educational and scientific significance.

Objectives

- To conserve and enhance all the important geological, biological, historical and archaeological features and the present landscape character of the park through appropriate techniques of resource management.
- To provide year-round day-use recreational activities and short-term walk-in and group camping in designated areas requiring minimal development for people of different interests, ages and physical conditions.
- To provide for interpretive and educational uses of the natural and cultural features with particular emphasis on the Niagara Escarpment in relation to the park.
- To retain the peaceful quality of the park by preventing through traffic and by prohibiting the use of snowmobiles, motorcycles, all-terrain vehicles and other forms of noisy recreational pursuits.
- To minimize any adverse effects of the park's development on the local community through appropriate techniques of park management.
- To provide opportunities for cooperative arrangements among the Ministry, municipalities, public or private agencies, individuals and groups for use of the park to achieve the park goal.

The objectives of the park are further explained and qualified in the Activity Allocations section. The visitor services and management plans for the park will provide more detailed information on how the objectives will be achieved.

Classification

Located on the Niagara Escarpment, the park encompasses an area of natural beauty with significant natural features and has been proposed primarily for passive recreational and educational uses. Therefore, it is designated as a "natural environment park" under the present Ontario Provincial Parks Classification System. Natural environment provincial parks reserve outstanding aesthetic, natural and historical features for recreation and education.

Zoning

The park has been divided into three zones, as shown in Figure 9. These are based upon the zoning system of the Ministry of Natural Resources. Each zone has been designated according to the criteria of values for preservation, conservation and recreational uses. Within the various zones, the resources of the park will be managed to achieve a variety of important objectives.

Development Zone: Five areas are proposed for the development associated with public access and use of the area. The two major development zones, close to the periphery of the park, are located on areas of low natural value that are suitable for development. Because of the location on upland areas, it will be possible to screen the development from view in most areas. A network of trails, while passing close by, does not have to pass directly across the development areas. The access roads, car parking, major day-use facilities and group camping areas are located in this zone.

A third development zone near the centre of the park consists primarily of the continued utilization and improvement of the existing farm structures to serve as a trail centre and as a focal point for other visitor services.

In conjunction with the Bruce Trail, which passes through the park, a fourth development zone will accommodate short-term walk-in camping. Upon review of the potential sites, this location was chosen to achieve a separation of park users.

A fifth development zone encompasses a small peripheral area to provide access to Swayze's Falls, a major feature of the park.

Hinterland Zone: This zone primarily covers the area surrounding the major natural features and serves as a buffer between the development zones and the natural zones. In general, the area covers much of the land previously cleared for agricultural use. The use of the hinterland zone will consist mainly of trail activities in designated areas, outdoor education activities and provision for other passive winter and summer recreation opportunities.

Natural Zone: The major natural features of the park and significant ecological habitats are located in this zone. Visitor circulation through this zone will be restricted to a well-defined trail system. Uncontrolled access would soon result in the general disturbance and deterioration of the resources. The most significant features for outdoor education and scientific study are located in this zone.

Recommended Land-use Control Zoning

The natural components of the landscape unit in the Short Hills area extend beyond the park's boundaries, especially toward the south where the headwaters of the Twelve Mile Creek are located. If the integrity of the park and the natural and attractive features of the landscape unit surrounding the park are to be retained, it is essential that land-use controls be implemented. The Advisory Committee's policy recommendations pertaining to land-use controls in the surrounding area have been referred to the Regional Municipality of Niagara and the Niagara Escarpment Commission for their consideration.

It is expected that the planning restraints contained in The Niagara Escarpment Act and the proposals for development control will enable the local and regional councils to ensure that any development which is allowed to take place will not destroy the character of either the park or its landscape setting.

Park Concept

Based on the accepted policy recommendations, three concept plan alternatives were prepared and reviewed as indicated in Appendix B. Concept 2 was selected since it best implemented the recommendations of the Advisory Committee. It was refined to comprise the master plan for the park. The concept does not provide for a road through the park, but places emphasis on the use of a trail network for internal circulation within the park.

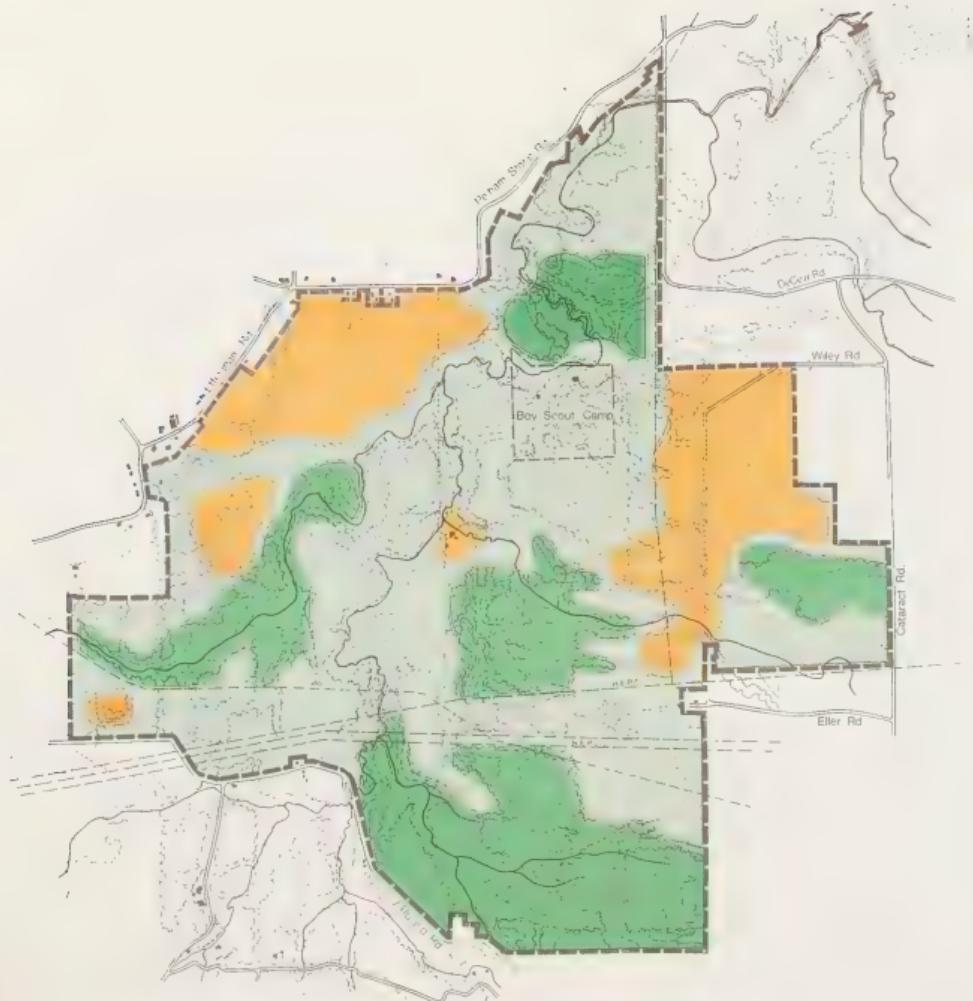
Master Plan Components

Development: The master plan (Figure 11) outlines the basic framework and relationship for access, parking areas, buildings, trails and recreational areas. Prior to any development, a site plan will be prepared as part of the master plan implementation program.

Visitor Services: The recreational and educational uses of the area compatible with the character of the park are discussed later. These provide the framework upon which the visitor services plan and program are developed.

Resource Management Areas: Figure 10 shows how the areas in the park will be managed. A variety of techniques will be used to achieve the objectives for each area and to ensure that the park features are retained and enhanced. The resource management considerations are discussed later.

Figure
9
Zones



0 400 800 1200 1600 2000 2400 2800 3200 3600 4000
0m 250m 500m 750m 1000m 1250m 1500m 1750m 2000m 2250m 2500m

Development

Access Routes

An important consideration of the master plan is that the majority of traffic generated by the park be directed away from the communities of St. Johns and Effingham because of the narrow roads and residential development in these areas. Within the next few years, Highway 406 is proposed to link up directly with the Queen Elizabeth Way at St. Catharines. With the improvement of Beaver Dams Road and Cataract Road, as proposed by the Regional Municipality of Niagara, this route will provide a direct north-south link to the park area. Major east-west traffic along Highway 20 can also reach the park via Cataract Road. Also, many park visitors are expected to use Pelham Road, which is used as a scenic road from St. Catharines out into the surrounding countryside.

Park Access

Two major vehicle access points to the park will be provided at Cataract Road and at Pelham Road. A secondary vehicle access will be provided off Holland/Roland Road because of its proximity to Swayze's Falls. This access and parking area will discourage vehicle parking on the very narrow and winding road. The existing roads, designated as access routes, require improvement and upgrading in the vicinity of the park to facilitate the safe movement of traffic. The environmental effects of the necessary improvements will be minimized by appropriate landscaping.

Road Closures

Within the park boundaries, there are opened road allowances that will be closed by municipal by-law since they are no longer required for vehicular traffic. They include: Hogsback Road between Thorold and St. Catharines; the road allowance between Lots 62 and 63, 85 and 86 and the portion of Wiley Road in Lot 62, Thorold; Pelham-Thorold town line abutting Lot 1, Concessions, I, II and III, Pelham and abutting Lots 65, 88 and Concession III, Thorold. The above roads in some places have become impassible to vehicles and in recent years have been used as trails. It will be possible to retain these routes as trails representing previous cultural patterns.

The road leading to Camp Wetaskiwin is designated as a private road with access restricted to persons visiting the Boy Scout camp. All undeveloped road allowances within the park will be formally closed under regulation of The Provincial Parks Act.

Walk-in Campground

This facility has been situated in association with the Bruce Trail that passes through the park. The area for the campground is approximately 20 ha with about half of it developed for camping and the other half intended to provide for buffering and trail activities. Four sites per ha will be provided to a maximum of 50 sites. Each site will be designed to accommodate about five persons and will be buffered from other sites by existing or planted trees. Water, washrooms, shelters, safe fireplaces and firewood will be provided.

Group Campground

The group campground is located in the eastern section of the park and appropriately separated from the developed day-use area. The facility will provide for organized and supervised group camping for a maximum of 200 persons. There will be four areas designed to accommodate about 50 persons each.

Developed Day-use Areas

Two major developed day-use areas are located close to the parking areas at the periphery of the park. Picnic areas of 16 to 20 tables per ha will be developed in phases, with 12 ha being developed in the initial phase. A maximum of 20 ha of picnic areas is planned. Small clusters of sites will be spaced to ensure an element of separation. Approximately half of the areas will be equipped with barbecue facilities. Open areas for informal recreational activities will be situated near the picnic sites.

Picnic tables without barbecue facilities will be located at points along the various trail systems for visitors who prefer to carry a packed lunch. In all picnic sites, the tables will be moved regularly to prevent deterioration of the areas from overuse. Washroom and water facilities in the major developed day-use areas will include provision for the handicapped. Additional washrooms will be located at specified points along the trail systems.

Outdoor Lecture Area

A small outdoor lecture area to accommodate about 100 people will be developed near one of the shelters.

Vista Points

Throughout the park, areas that offer vistas and interesting panoramas have been identified. These sites will be retained as vista points to assist in the orientation of park users.



Mountain Mills (1872)

DeCew Falls

Proposed Park Extension Area For
Recreational Use.

Signage

Within the park, signs will be kept to a minimum. They will be used to orient park visitors, to encourage safety and to assist in the protection of ecologically fragile areas. A signage plan for the park will be developed to guide the types and placement of signs.

Fencing and Buffer Planting

To reduce indiscriminate access and prevent trespass onto neighbouring properties, the park border will be clearly marked. In some cases, fencing will be required and will conform to the general types of fences characteristic of the area. Boundary areas will be planted with trees. Where fencing intersects with trails, stiles or other appropriate structures will be erected to permit continuity of trail use.

Carrying Capacity

Although there is considerable scientific literature on carrying capacity related to park and recreational development, there is no conclusive and reliable method of determining the carrying capacity of a specific natural area because of the numerous factors involved. This can only be determined after staged development has been incorporated and the effects of use of the area on the landscape monitored.

Parking spaces for 200 cars and 10 buses will be provided at the northern entrance and for 250 cars and 10 buses near the eastern entrance. Only 100 parking spaces and a small lot of 25 spaces at Swayze's Falls will be provided in the initial phases of development. Since it is expected that many people will walk or ride horseback into the park, the quantity of such users should be surveyed and considered in the overall monitoring of the park use. It is expected that with this level of development, the total number of users in the park at any one time will range between 2,000 and 3,000 people.

If the results of the monitoring program do not record signs of excessive use, then additional parking facilities could be staged up to the maximum outlined. Beyond 475 parking spaces, even if the ecological carrying capacity is greater, the park would tend to become congested, reducing the natural charm of the park and perhaps lessening the quality of the visitor experience.

Activity Allocations

Activity	Facilities	Capacity
Picnicking	400 tables	1,600
Hiking (cross-country skiing)	24 km	300
Horseback riding	paddock + 9.6 km	100
Bicycling	5 km	150
Vita parcours (Fitness trail)	2.4 km (15 stations)	75
Fly fishing	2,286 m	100
Group camping	4 sites	200
Walk-in camping	50 sites	250
		2,775

Parking Areas

The design and separation of the parking areas need to be handled in a very sensitive manner. Instead of one or two large parking areas, several smaller areas in units of 40 to 60 spaces will be provided. The parking lots will be designed to permit occupants to leave their vehicles safely without having to cross the car park or roadway to gain access to the day-use area. Surfacing material will depend on the level of use. Consideration will be given to the requirements of handicapped park users.

External Car Parking

Restricting the amount of car parking spaces within the park could result in an increase of parking on the neighbouring roads. This would defeat the purpose of the master plan by allowing uncontrolled numbers of users and would also pose a safety problem. Therefore, such parking will have to be strictly controlled by the creation and enforcement of municipal by-laws.

When the available parking spaces within the park have been filled, visitors will need to be directed to other recreation areas, provincial parks, conservation areas, private parks, etc. in the immediate vicinity. This will require an efficient public information system and close liaison between the public and private sectors which offer recreational opportunities.

Architectural Theme

The principle guiding construction in the park will be to blend the structure with the landscape through appropriately planned location of the buildings and the choice of building materials.

All new buildings will be designed and constructed, and all existing structures renovated, to meet the visitor's basic needs and be flexible enough in layout to absorb changes in future use. All buildings and facilities will provide for the special requirements of handicapped visitors.

Construction design will remain consistent throughout the park. Only the size and shape of the buildings will vary according to their function. Building materials, whenever possible, will be chosen for their weathering qualities, texture and durability.

Since the site has a material ruggedness and variety, the buildings will reflect this character. Highly fashioned urban construction will be avoided. Use will be made of the natural dynamics and decorative quality of the structural elements of the building.

Visitor Centre

Located close to a parking area, yet with its orientation to the park interior, the visitor centre will be designed to accommodate a wide variety of uses within a basic layout. The facility will provide year-round, multi-purpose space which can be used for outdoor education and interpretation opportunities. An important function of the visitor centre will be to orient visitors to the experiences offered within the park and the significance of the park's resources. Appropriate display areas, storage areas, washrooms and a utility room for first aid will be provided. With its strategic location near a major park entrance, it will control access to the park interior by conducting visitors to the trail network that crosses the park at this location.

Park Headquarters

The park's administration and maintenance headquarters will be comprised of two or more separate buildings situated close to the periphery of the park. Careful attention will be given to the location of the buildings to ensure harmony with the landscape. The facilities will provide work space and storage for staff and equipment associated with the administration and management of the park. A separate, controlled entrance will facilitate access and minimize conflicts between public and park vehicle traffic.

Shelters

Shelters will be located in carefully designated areas throughout the park for use during inclement weather and to provide focal points for activities. Design of the shelters will take into consideration protection against vandalism and the possibility of providing interpretive panels pertaining to the natural and cultural features of the park. A multi-purpose shelter will be located in each major developed day-use area. The design of these shelters will permit enclosure for

winter use. Small picnic shelters will be located along the trails.

Trail Centre

The existing complex of farm buildings and related structures located near the centre of the park will be adapted to serve as a trail centre. These buildings will provide a focal point for a variety of trail activities, shelter during inclement weather and washrooms. The facilities will also be suitable for outdoor education and interpretative programs. Because of its central location, provision will be made for the requirements of emergency services such as first aid.

Trails

The internal circulation in the park will be by means of an extensive trail system that will complement other passive recreational opportunities. The trails will be closed to all forms of public motorized vehicles. The system is designed to encourage use of the park by hikers, equestrians, cyclists and cross-country skiers. Wherever feasible, the trails follow the natural terrain and incorporate as many of the existing routes as possible because of their cultural significance related to previous land-use patterns. In most cases, a width of 1 to 1-1/2 m is adequate for the walking and hiking trails, while approximately 3 m will be required for the bicycle and horseback riding trails. During construction of the trails and associated facilities, as little of the existing vegetation as possible will be removed. To provide an integrated trail system, some stream crossings will be required. In such cases, rustic wooden bridges will be provided. Where the ground is marshy, short lengths of boardwalk will be constructed.

Trail surfaces will be reinforced where necessary, using appropriate materials to maintain their character. Access to ravines and other geological features and areas of interesting flora will be confined to those which have already been subject to, or can at least tolerate, disturbance. The trails which cross the open grassland areas are to be mown slightly lower than the surrounding grassland. On the park boundary, suitable markers will be placed at designated trail access points. Throughout the trail system, markers will indicate the distance covered. Because of the very rugged terrain of the park, it would not be possible to design all of the walking trails to serve the requirements of handicapped users. However, where feasible, specially designed trails for the handicapped will be provided in interesting natural settings.

A system of walking trails is provided throughout the park. The bridle paths are primarily confined to the western section of the park, except for one along the east-west hydro corridor to allow for a linkage to the eastern boundary. Similarly, the bicycle trail, because of topographical constraints, is limited to a route in the northeastern section.



Visitor Centre

Visitor Centre (Interior)



Visitor Services

Bruce Trail

The Bruce Trail, internationally known as a long-distance hiking trail from Niagara to Tobermory, passes through the park. It is expected that the existing route of the trail will be relocated, as shown in Figure 11, in order to provide greater integration with the overall park development. The Ministry will consult with the Bruce Trail Association in the implementation of development proposals associated with the trail.

The purpose of this section is to outline briefly the scope and intent of the visitor services program. As the master plan is implemented, a comprehensive visitor services plan and program will be developed based on the guidelines provided in the Policy Recommendations Report and the master plan.

Information

Short Hills Provincial Park has a complex landscape of hills, valleys, streams, waterfalls and vegetation, encompassing approximately 688 ha. Different landscape characteristics, facilities and services are found in various locations throughout the park. A visitor could easily get confused trying to find an area or feature of interest.

To ensure that visitors understand what Short Hills Provincial Park has to offer, an information program will be required. Brochures, maps and signs will explain locations, activities, use requirements, use restrictions and opportunities in the park. Special features and activities will be identified to assist the park user in understanding the operation of the park, its functions and its significance as part of the Niagara Escarpment. Such information will be distributed throughout the province by government agencies, through other park areas and through radio, television and newspapers. The information program will also deal with joint ventures between the Ministry and other groups and agencies and the relationship of the park to other recreation and educational opportunities.

Interpretation

The cultural and natural history of the Short Hills area is important to gain an understanding of the region and how it developed. These aspects will be interpreted in the park and outside the park to interested people. Interpretive programs in other provincial parks and talks by Ministry staff to educational and community groups outside the parks have been popular and important functions.

Interpretive themes include: natural history (geomorphology and biology); cultural history (local and regional); the Niagara Escarpment; resource management program components and the management of a recreational resource.

The intention of interpretation is not to place items and artifacts in a museum for people to see and perhaps forget, rather to encourage visitors to explore the resources on site. Interpretation will be provided at various levels of detail to ensure that both the users who are familiar and those who are unfamiliar with the area will derive benefit from the experiences. The park will have a visitor services centre to provide information and orientation. Users of the park will be directed to specific sites, features and activities related to the interpretive themes.



Outdoor Education

Park programs for the general public will attempt to provide for those activities that assist in the development of the widest range of educational experiences consistent with the resource management objectives.

Three aspects of outdoor education include; physical recreation skills; general environmental and cultural awareness and specific curriculum-related studies. The Short Hills Provincial Park area can accommodate all three types, provided there are appropriate planning, scheduling and supervision. Because of its location near a large, diverse urban population, the park will provide basic facilities and opportunities for educational groups of all levels, from primary classes through advanced university study, in order to develop skills or to study the resources of the park.

To ensure a coordinated and high quality outdoor educational experience, the following organization of responsibility between the Ministry and other agencies is outlined below:

Ministry of Natural Resources:

- Development of park facilities.
- Management of the parkland and associated facilities.
- Provision of resources and facilities for educational opportunities.
- Provision of technical assistance for the development of program content.
- Responsibility for an advance reservation system for educational group use of the park for specific programs and for all administrative procedures required for group visits except those pertaining to transportation arrangements.
- Supervision of the general public.
- Hiring, training and supervision of the park staff, including administrative, management and visitor services personnel.

Participating boards of education, educational institutions and groups:

- Transportation arrangements of groups.
- Classroom and specific on-site instruction of the students through the participating teachers and other supervisors.
- Guidance, conduct and discipline of attending groups through the participating teachers and other supervisors.

- Cooperation with the Ministry in the development of program content, the evaluation and the distribution of resource material.

- Provision of all auxiliary equipment and materials for the programs.

It is expected that provision for educational group camping will be made available at the Boy Scout Camp following cooperative arrangements among the Ministry of Natural Resources, the Boy Scouts Association and educational institutions and groups. Opportunities for research activities in the park will be made available on an approval basis and in accordance with provincial park policies.

Recreation Programming

Emphasis within the park will be placed on general public use of the recreation areas and facilities. However, provision will be made by the Ministry of Natural Resources for the control and coordination of group activities organized by various interest groups. For example, an orienteering competition or nature outing could be sponsored by an interest group in association with the Ministry. Such events would be on a reservation basis to ensure that group uses do not conflict or adversely affect general public use in the overall operation of the park. Within the framework of approved policies, recreational activities will be provided for in designated areas of the park and only during specific periods of the year as required to prevent deterioration of the park resources. Park personnel will be available to assist visitors in their pursuit of recreational and educational experiences. These will include: walking/hiking/viewing, picnicking, horseback riding, orienteering, vita parcours, bird watching, photography, painting and sketching, fishing, bicycling, cross-country skiing, snowshoeing, tobogganing, ice skating, horse-drawn sleigh riding, skijoring, novice downhill skiing, walk-in camping and group camping.

Resource Management Areas

The resources in Short Hills Provincial Park provide an aesthetic, natural setting for a variety of recreational and educational activities. To achieve the objectives of providing for both recreational opportunities and the protection of the natural environment, it will be necessary to carry out a program of resource management in the park.

The park zones were established based on the inventory and analysis of environmental information. Using similar information, areas have been identified in which recognized principles and methods of resource management will be applied. A detailed resource management plan (within the policies of the master plan) will be formulated by a technical planning team composed of Ministry district and regional staff. The resource management areas are shown in Figure 10.

The general use of chemicals for vegetation and insect control will not be permitted within the park except in the event of specific problems which might cause permanent damage to the park environment and detract from the visitor experience. The limited use of chemicals within the park may be necessary because of the proximity of the park to agricultural lands.

Development Areas

The day-use, picnicking and walk-in camping areas will require fairly frequent cutting to maintain a hard-wearing grass cover. It will also be necessary to have an annual spring and autumn fertilizing and turf aeration program to ensure that these grass areas do not deteriorate. Trails will be managed to maintain the required surface for enjoyable use by the public and to ensure the protection of associated features. The impact of visitor use in the intensive-use areas will be minimized through employing appropriate management techniques. Where possible, the existing trees and hedgerows will be retained in the development areas. Indigenous trees and shrubs will be planted to provide for buffer areas and improved wildlife habitat.

Landscape Feature Areas

These areas comprise the majority of the park and include the most significant natural and cultural features within the natural and hinterland zones. They will be carefully managed to perpetuate and enhance the features. Development will consist of trails, shelters and washrooms. Management will include controlled access, planting of indigenous trees (such as white pine, red ash, black walnut) and shrubs (such as multiflora rose, sumac and dogwood), to enhance the existing vegetation. Controlled, selective cutting will be carried out to remove hazardous trees adjoining the trail system or to allow for regeneration

of the vegetation and possibly for construction of park facilities. In the wooded areas or fields away from the trails, dead trees will be allowed to remain undisturbed since they provide excellent habitat for birds and other wildlife.

Open Grassland Areas

Several open grassland areas exist within the park as a result of previous land-use practices. The open areas contribute greatly to the visual quality of the park, and the edge effect is conducive to habitation by certain wildlife species. For these reasons, a number of areas throughout the park will be managed to retain their open character. Periodic mowing will prevent encroachment. The cutting will take place so that the effects on wild flowers, butterflies, insects and field nesting birds are minimized. Fall cutting destroys seed heads which are a winter food supply for birds and other animals, although it may be necessary to conform to noxious weed control regulations.

Natural Succession Areas

Natural succession is an important process associated with the emphasis placed on maintaining the character of the park landscape. Natural succession studies are an integral part of the outdoor education and interpretive program envisaged for the park. Therefore, a section of the park will be designated to allow natural succession to take place. Within this locale, one or more natural succession areas will be retained to represent the various stages of the process.

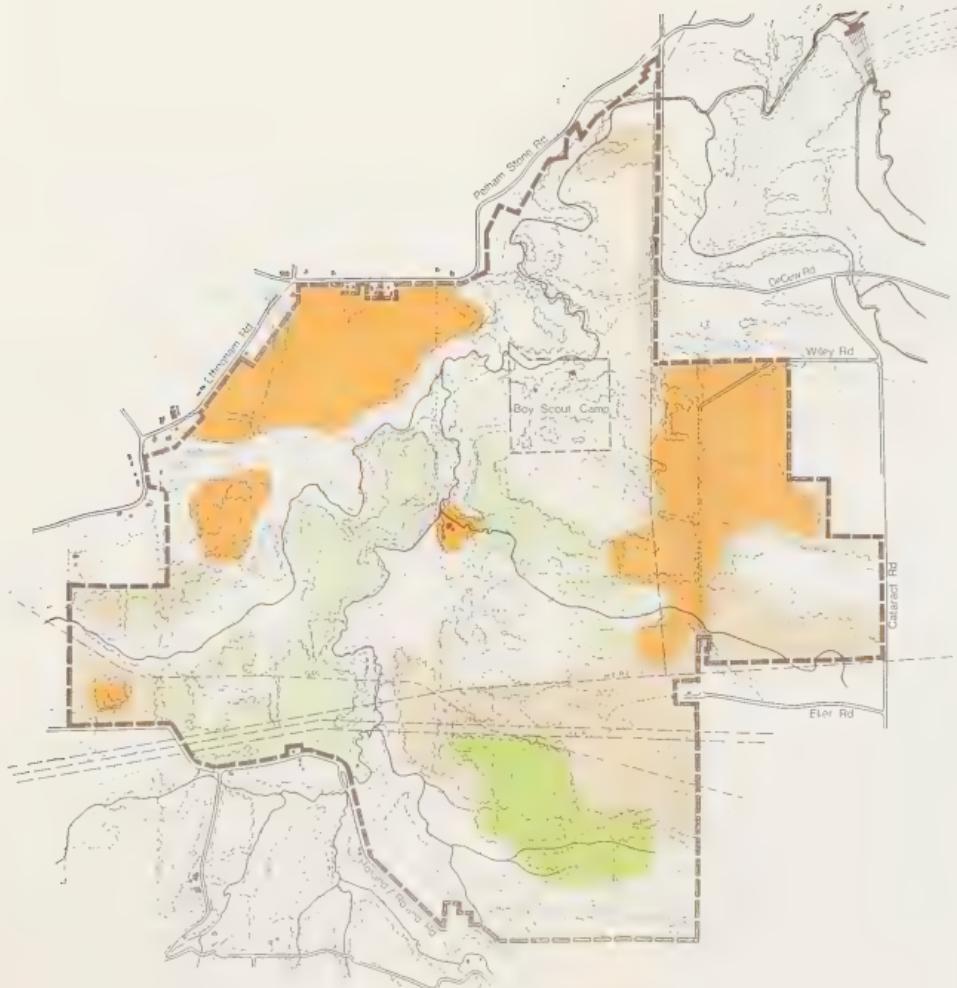
Wildlife Habitat Areas

There is a variety of wildlife in the park which serves an important role in maintaining a natural balance, in addition to providing opportunities for recreational viewing, painting, sketching and photography. Habitat management will be a component of the resource management plan for the park. The hydro corridors will be enhanced for wildlife by the planting of vegetation covers such as highbush cranberry, red cedar and hawthorn. Tree and shrub planting, hedgerow maintenance and improvement, edge effect enhancement, nesting site improvements and selective cutting are some of the practices that will contribute to an abundant and healthy wildlife population in the park.

Twelve Mile Creek

Fisheries management for Twelve Mile Creek is somewhat hampered by the fact that its headwaters are outside the park and by the possibility of water pollution from external sources. Therefore, a significant aspect of the fisheries management program is the protection of the headwaters area by

Figure
10
Resource
Management Areas



- Development Areas
- Wildlife Habitat Areas
- Natural Succession Areas
- Open Grassland Areas
- Landscape Feature Areas
- Park Boundary

Park Operation and Management

land-use controls, expected to be implemented by the Regional Municipality of Niagara and the Niagara Escarpment Commission. An extension education program, conducted by the Ministry of Natural Resources for private landowners along the stream course, would also be helpful in improving the stream quality by reducing pollution sources and by the rehabilitation of the stream banks. Within the park, emphasis will be placed on preventing stream pollution.

A Twelve Mile Creek fisheries management area will be designated. In this area, attention will be given to the stabilization of the stream bank by planting species such as pussy willow and by the designation and rotation of fishing areas that are least susceptible to deterioration. In some places, it may be necessary to improve the stream habitat by deepening areas and creating spawning sites. The management program will endeavour to provide a high quality fishing experience supported by native fish populations rather than by stocking the stream, although the latter may be required.

Boy Scout Camp

Camp Wetaskiwin, operated by the Boy Scouts of Canada, St. Catharines District Council, is located within Short Hills Provincial Park. Following the acceptance by the Minister of Natural Resources of Recommendation No. 80 of the Policy Recommendations Report, the property will not be acquired by the government at the present time. A formal agreement (Appendix C) between the Boy Scouts of Canada and the Ministry is intended to ensure compatibility of camp activities and land management programs with park objectives. However, if a satisfactory agreement cannot be negotiated, or if the site is no longer required for its present purposes, then the land will be purchased by the Ministry.

Staff Requirements

The park staff must possess unusual qualities and skills if the park's objectives of environmental protection and favourable user response are to be achieved. Energy, enthusiasm, imagination, initiative, tact and a commitment to the park goal are essential staff qualities. All levels of staff will need to be trained and oriented to the park's resources and the policies associated with its planning, development and management. Staff requirements are shown in Table 1.

Park Superintendent: A great deal will depend on the skills and personality of the park superintendent, who should be experienced and well-qualified in a broad range of subjects including natural sciences, social sciences, staff management and the planning and development process. The superintendent will be responsible for the overall operation and management of the park.

Assistant Park Superintendent: This position entails responsibility for assisting in the development, maintenance and operation of the park; it requires pertinent resource management training and experience.

Visitor Services Programmer: Information, interpretation, outdoor education and recreation programming are important services that will be provided for the park visitor. The visitor services programmer will be responsible for the planning, implementation and coordination of the visitor services program. Again, because of the emphasis placed on the natural environment of the park, this person will be a qualified biologist or interpretive naturalist whose duties will also include research associated with the park.

Park Conservation Officer: This person will provide information to park users and be responsible for the protection of visitors, park facilities and resources.

Full-time and Part-time Staff: The organization of park staff is shown in Table 2 and, depending on the extent of public use of the park, may need to be augmented by full-time assistants. In addition, a variety of seasonal staff will be required as maintenance, gate and visitor services personnel. The park staff should reflect a broad range of ages and backgrounds to serve the wide variety of users.

Volunteers

Few areas of the public service have a greater potential for volunteers than recreation and outdoor education. Indeed, the chance to be a volunteer helper is often a form of recreation or a learning experience. Volunteers can assist in the organization of activities, in preparing resource material, supervising and acting as resource specialists, as well as other useful activities. If carefully selected,

oriented, trained, assigned and supervised, volunteers could be invaluable to the successful operation of the park. The proximity of the park to a large urban population increases the potential for the effective use of volunteers including senior citizens, college and university students and others. The volunteers could form a "Friends of the Park Association" with guidelines for their involvement and support. However, volunteers will only supplement, not replace, professional park staff.

Table 1: Staff Requirements

	Full-time	Part-time or Seasonal
Administrative		
Park Superintendent	1	—
Stenographer/Clerical	1	1
Operations and Maintenance		
Assistant Park Superintendent	1	—
Maintenance and Operations Staff	2	4
Park Conservation Officer	1	—
Security Staff	1	3
Gate Staff	—	6
Visitor Services		
Visitor Services Programmer	1	—
Visitor Services Staff	—	6
TOTAL	8	20

Table 2: Organizational Chart

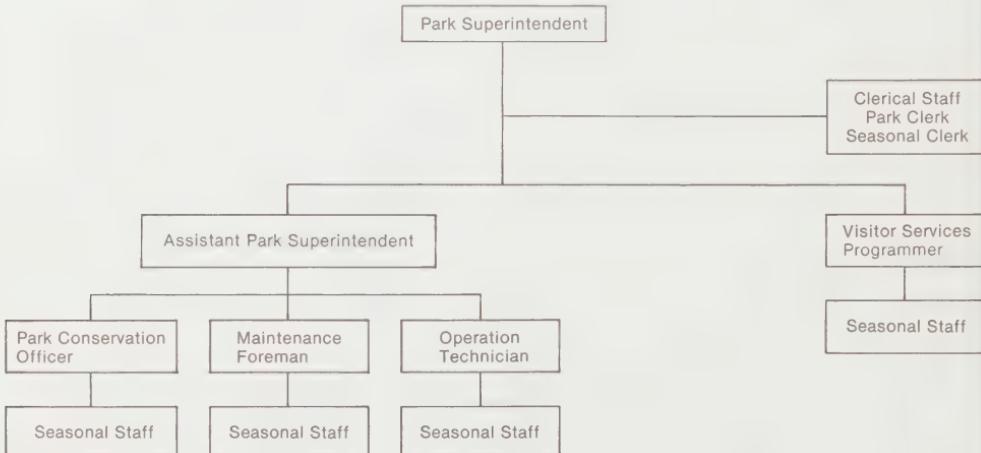
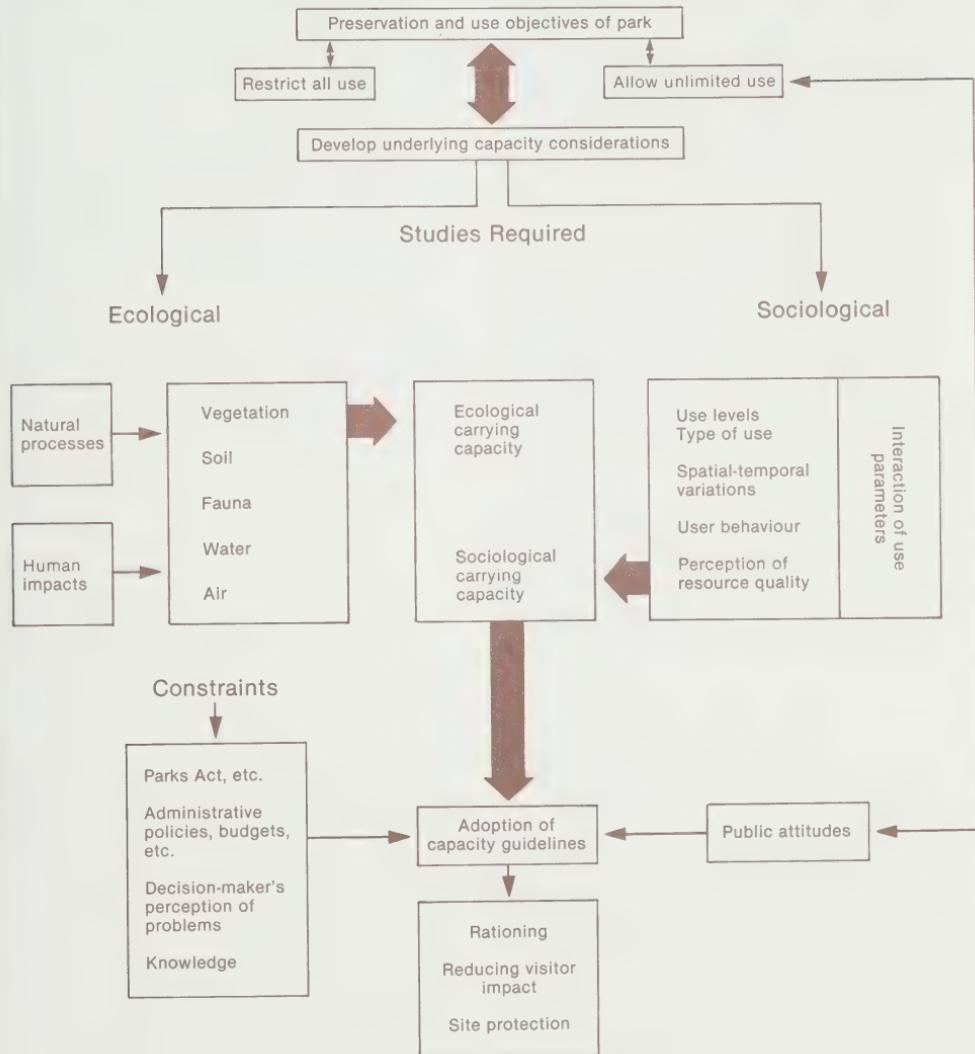


Table 3: Monitoring Process, Carrying Capacity Paradigm



Adapted from George H. Stankey. *Resources for the Future, Annual Report 1972*. (Washington, D.C., p.49).

Park Services

Water Supply

At present, the Regional Municipality of Niagara water system does not extend to the park boundaries. It is proposed that a main line be constructed from the DeCew plant to service the eastern development zone (approximately 3 km), which includes the visitor services centre and the park administration complex. A good ground water supply, including three existing wells, should meet the needs of the other development zones. Provision will also be made for the storage of water in the park for emergency fire use.

Electrical Supply

The required electrical services will be obtained locally. The internal power supply to various parts of the park will be located underground where feasible, provided no environmental damage is caused. High-tension cable corridors presently cross the park, and there is little possibility of burying or relocating them. However, in the event that there is a need for increased capacity, the Ministry of Natural Resources will endeavour to have Ontario Hydro seek alternative routes rather than expand the corridors within the park.

Telephone Service

Telephone services extend to the park. Where feasible, the internal telephone wiring to various sections of the park will be located underground provided no environmental damage is caused. Arrangements will be made with Bell Canada for the installation of public pay telephones at specified locations in the park.

Fire Protection

During the late spring and summer months, there is a high risk of fire within the park. Park visitors will be informed of this situation through appropriate means. The St. Johns Fire Station, served by volunteer firemen, is located very close to the park. The area is also served by fire stations in St. Catharines and Thorold. Agreements will be negotiated between the Ministry of Natural Resources and local fire departments for fire protection in the park. In addition, adequate hand equipment to fight grass fires will be located at strategic points and all reasonable precautions will be taken, including the training of park staff.

Emergency Services

All reasonable precautions will be taken to ensure the safety of park visitors. A comprehensive emergency services plan will be developed including a communications network, in addition to first aid, fire, police and ambulance services to the park.

Sanitary Facilities

The Regional Municipality of Niagara sewage system does not extend to the park, nor is it expected to in the immediate future. Therefore, to service the developed day-use areas and visitor centre, septic tanks and tile bed installations will be necessary. For sanitary facilities throughout the remainder of the park, including the walk-in camping area, vault toilets will be situated at specific locations.

An ample supply of waste containers will be provided in the developed day-use areas, walk-in campground and at other locations in association with the trail systems. These will be emptied on a regular basis by maintenance staff and taken to a central garbage pick up area. Removal from the park will be subject to an agreement between the Ministry and the local or regional government or a private company.

Phasing of Development

A number of alternative phasing plans were evaluated taking into consideration the characteristics of the site and the progress of the land acquisition program. Development of the park will be phased to provide for the establishment of functional units within the development zones by the end of each phase. The costs associated with the first phase will be kept to a minimum to ensure that the park can be made available to the public at the earliest opportunity. It is expected that staff hiring will be associated with the phasing. The phasing program is based on the development of the facilities related to the three entrances: Cataract Road, Pelham Stone Road and the Holland/Roland Road. To permit accessibility to all areas of the park and to control the use of the park, the development of each area will be phased. A site plan will be prepared for the development of facilities as part of the implementation of the master plan.

Phase 1: Holland/Roland Road Entrance (Swayze's Falls)

1. Access: Improvement to 610 m of Holland/Roland Road and construction of internal road.
2. Parking: One lot for 25 cars.
3. Walking Trail: 3.2 km with handrails, bridges and boardwalks as required.
4. Bridle Path: 4.8 km.
5. Comfort Station: Type 9 equivalent with appropriate architectural modifications.
6. Electrical Supply: 0.32 km of underground primary/secondary lines with transformer in comfort station.
7. Signage: Interpretive and orientation material and displays.
8. Resource Management: Fencing of Swayze's Falls viewing area and other safety measures.
9. Bruce Trail Corridor: Rehabilitation, improvement and relocation as required.

Phase 2: Cataract Road Entrance

1. Access: 0.48 km roadway from Cataract Road, plus entrance structure.
2. Entrance Control Office: One unit.
3. Roads: 4.2 km of internal roads from control office to all use areas; 1.6 km of paved external road.
4. Parking Areas 3 and 4: Space for 100 cars including 10 bus spaces.
5. Maintenance and Administration: Maintenance building and storage areas (three vehicles); 119 sq. m of office space for administration building.
6. Day-use Area: 6 ha of picnic area.
7. Trail Shelters: Two units to accommodate 50 people each close to trail and near comfort station.
8. Sanitary Facilities: One Type 8 equivalent comfort station near parking area 3; one Type 9 equivalent comfort station near trail shelter.
9. Water Supply: To service all buildings and trunk line from DeCew plant; 16 taps near picnic areas.
10. Electrical Supply: Underground lines with transformers incorporated in service buildings; 2.4 km of secondary lines.
11. Telephone Service: 0.8 km line from Eller Road.
12. Walking Trails: 8 km.
13. Group Campground: To accommodate 200 people; parking for 25 cars and two buses; 4 ha of open play area.
14. Walk-in Campground: 50 informal campsites on a 10 ha site.
15. Shelter: One picnic shelter adjacent to parking areas 3 and 4.

Phase 3: Pelham Stone Road Entrance

1. Access: 0.32 km of roadway to control office; entrance structure; signage.
2. Roads: 1.28 km of internal roadway from control office to equestrian area; service lane from Effingham Road to walk-in campground.
3. Parking Areas: 50 spaces each at picnic and equestrian areas including 10 bus spaces.
4. Day-use Area: 6 ha of picnic area adjacent to parking areas 9 and 10.
5. Sanitary Facilities: One Type 8 equivalent comfort station to serve parking areas 9 and 10.
6. Shelter: One picnic shelter near parking area.
7. Water Supply: One drilled well with six taps with pressure system in comfort station to serve day-use area and walk-in campground.
8. Electrical Supply: 0.8 km of underground lines from Pelham Stone Road.
9. Walking Trails: 1.6 km, plus linkage to Swayze's Falls.
10. Equestrian Centre: 2 ha of open area with paddock.

Phase 4: Cataract Road Entrance

1. Visitor Centre: Approximately 465 sq m based on approved design concept; display areas, lecture room, herbarium display, museum, staff working area.
2. Entrance Structure: Signage; landscaping.
3. Parking: One lot at visitor centre for 25 cars plus roadway; space for 100 cars in parking areas 5 and 6.
4. Day-use Area: 4 ha of picnic and play area.
5. Sanitary Facilities: One modified Type 8 to serve parking areas 5 and 6; one Type 9 comfort station; one vault privy.
6. Shelter: One picnic shelter near picnic areas 5 and 6.
7. Bicycle Trail: 4.8 km, connecting visitor centre and parking areas to Hogsback area.
8. Walking Trail: 1.6 km extension to Phase 2, plus linkages.
9. Vita Parcours: 2.4 km, with fifteen stations.

10. Water and Electrical Supply: To service all facilities in Phase 4 as required.

11. Resource Management: Tree and shrub planting; wildlife habitat improvement; grass cutting in open grassland areas.

Phase 5: Pelham Stone Road Entrance

1. Parking: Parking areas 7 and 8 for 100 cars.
2. Comfort Station: One modified Type 8.
3. Shelter: One picnic shelter near parking areas 7 and 8.
4. Day-use Area: 4 ha of picnic and play area.
5. Water and Electrical Supply: For facilities in Phase 5.

Cataract Road Entrance

1. Walking Trail: 3.2 km in northeastern section of park.
2. Holland/Roland Road Entrance

 1. Resource Management: Rehabilitation of use areas; tree planting and fisheries management programs on Effingham branch of Twelve Mile Creek.
 2. Walking Trail: 3.2 km.
 3. Shelter: One winterized picnic shelter.

Appendices

Appendix A: Short Hills Provincial Park Public Participation Program

The public was involved from the initial stages of the Short Hills Provincial Park master planning process. The park is located close to centres of population, and it was recognized that the development of the park would be of interest to many people. The area population was known to be informed and interested regarding public projects. Knowledge and insights about the park area derived from living in the vicinity would provide important information to the planners. Also, information about the planning process and the resources of the park would assist interested persons in contributing to the formulation of a master plan. A public participation program would provide for an exchange of information and a review of the proposals for park development. To be most effective, it was recognized that the public participation program should begin with the formation of the park goal, objectives and policies as preliminaries to the preparation of a master plan.

Stage One of the public participation program commenced with the appointment of an Advisory Committee by the Minister of Natural Resources. The Advisory Committee, as specified in the terms of reference, was responsible for soliciting public viewpoints on the proposed park. To achieve this at an early stage, the Committee prepared and distributed an information brochure, Short Hills Provincial Park, Public Participation Stage 1, during November 1973. The booklet contained background information about the role of the Committee, the park resources, a list of suggested topics for comment and advance notice of public meetings that would be held. Response to the brochure and attendance at the meetings indicated a high level of interest. Over 200 submissions were received, and several hundred persons attended the two public meetings held in Pelham and St. Catharines in January 1974. The comments received provided useful information to the Advisory Committee and Ministry staff. A majority of the responses indicated a desire for a quiet, natural area. Accepting this basic objective, the Draft Policy Recommendations Report was prepared by the Advisory Committee.

Stage Two involved distribution of the Draft Policy Recommendations Report and the soliciting of public comments pertaining to the recommendations. Public response was again of a high level. Almost 200 briefs were received, and several hundred persons attended a public meeting in St. Catharines in May 1974. Many of the submissions supported all of the recommendations. However, two major recommendations, namely, that the park be extended over adjacent private land and that snowmobiling be prohibited in the park, met with strong opposition from local residents and snowmobile clubs. Taking into consideration the comments that were received, the Advisory Committee prepared the final Policy Recommendations Report that was submitted to the

Minister of Natural Resources in July 1974 for review and approval. In August 1974, copies of the Policy Recommendations Report, together with a statement by the Minister announcing the accepted recommendations, were distributed to the public.

Based on the accepted policy recommendations, the Ministry of Natural Resources park planning staff, in association with the Advisory Committee, prepared a preliminary master plan. Stage Three involved the distribution of the preliminary master plan and the soliciting of comments. Copies of the plan were printed in several newspapers in the Niagara Peninsula.

The preliminary master plan and other information about the park was displayed at the Ministry district office in Pelham, between September 21-23, 1974. Advisory Committee members and Ministry staff were available at the display to provide additional information and to receive comments. Over 200 persons visited the display and many written comments were submitted. Following a review of all the submissions, the Ministry staff and the Advisory Committee prepared the Short Hills Provincial Park Draft Master Plan, which was submitted to the Minister of Natural Resources for review and approval.

Appendix B: Concept Plan Alternatives

Following acceptance of the policy recommendations, the Ministry of Natural Resources master planning staff, in association with the Advisory Committee, prepared three concept plan alternatives for review. The concept considered to be the most appropriate was selected and refined to form the basis of the master plan.

Each of the concepts contained the main plan components, namely: entrance and day-use area, visitor services facilities, park administration area, the route of the Bruce Trail and walk-in camping area. The differences among the concepts were:

Concept 1 (a): Provide for major day-use development on the two peripherally-located areas and only one entrance off Cataract Road, with an internal road connecting the two developed areas.

Concept 1 (b): Provide for greater emphasis on the development of day-use and winter sports facilities in the valley area in addition to the other two areas. Also, only one entrance would be provided requiring a through road to connect the sites.

Concept 2: Provide for two major entrances off Cataract Road and Pelham Road with the possibility of a supplementary access point off Holland/Roland Road in the vicinity of Swayze's Falls, a major feature of the park. This concept would not require a through road in the park, but would place emphasis on the use of a trail network for internal circulation.

All of the concept plan alternatives reflect variations of the minimal development character of the park as envisaged by the Advisory Committee and supported by a large number of briefs submitted by the public. The three alternative concepts were carefully reviewed and evaluated by the Advisory Committee and Ministry master planning staff.

Concept 2 was selected as best implementing the proposals in the Policy Recommendations Report and was further refined to form the basis for the master plan.

Appendix C: Areas Requiring Agreements

Boy Scout Camp

An agreement between the Ontario Ministry of Natural Resources and the Boy Scouts of Canada, St. Catharines District Council, concerning the future development and management of Camp Wetaskiwin will be negotiated. Discussions between representatives of the Ministry and the Boy Scouts Association have been initiated, but no date has been established for the finalization of an agreement.

Ontario Hydro

Preliminary discussions with Ontario Hydro regarding the use and management of existing rights-of-way surrounded by park land have caused concern. It is expected that a satisfactory agreement can be reached to carry out the intent of the Policy Recommendations Report with particular reference to Recommendations 11, 13, 18, 33, 38, 39, 73 and 74. The vegetation management will conform to the objectives of Ontario Hydro and the Ministry of Natural Resources.

Peripheral Areas

As recommended by the Advisory Committee, a preliminary concept plan, Figure 2, for the peripheral areas of public lands in the extended area has been prepared for review by the agencies involved, namely, Ontario Hydro, Brock University, St. Lawrence Seaway Authority and the Regional Municipality of Niagara. Recreational and educational use of the peripheral areas under the auspices of the Ministry of Natural Resources is dependent upon negotiated agreements with the various agencies or the transfer of certain lands. Although preliminary discussions have been held between representatives of the Ministry and the agencies, it is apparent that a period of about one year may be involved before the required agreements or land transfers can be obtained. The eventual use of the areas will be dealt with as a future appendix to the master plan.

Logo Description



The park logo has been developed so that it can be effectively used in communications relating to the location and identification of the park. Within the park area, the dominant natural features are the Niagara Escarpment and associated landform with undulating topography, meandering creeks and woodlands. This logo has been designed to reflect the natural environment of the park.

The logo shown above contains curving lines representing the hills and valleys, as well as a symbolic representation of the forests, the varying elevations, and the Twelve Mile Creek.

References

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Figure 11

Short Hills Provincial Park Master Plan

- [F] Lowland Areas
- [H] Plateau Areas
- [WATER] Hydro Lines
- [RED LINE] Park Boundary
- [BICYCLE TRAIL] Bicycle Trails
- [WALKING TRAIL] Walking Trails
- [BRIDE TRAIL] Bride Trails
- [EXISTING VEGETATION] Existing Vegetation
- [PROPOSED VEGETATION] Proposed Vegetation



Ministry of
Natural
Resources
Ontario

Hon. Frank S. Miller
Minister
Dr. J.K. Reynolds
Deputy Minister

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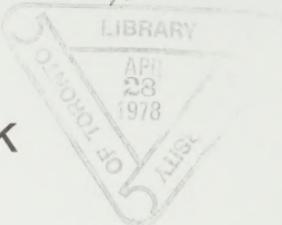


Figure 11

Short Hills Provincial Park Master Plan

- Lowland Areas
- Plateau Areas
- Hydro Lines
- Park Boundary
- Bicycle Trails
- Walking Trails
- Bridle Trails
- Existing Vegetation
- Proposed Vegetation





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